Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (currently amended): A laser system that produces radiation at an operative wavelength, the system defining a laser cavity having an associated electric field pattern at the operative wavelength, and the system comprising:

a mode-locking element configured to mode-lock output of the laser system; and

a ~~semiconductor~~ nonlinear increasing loss element that includes a semiconductor material

having a band-gap larger than the energy of a photon at the operative wavelength and smaller than twice the energy of a photon at the operative wavelength, and

having a position~~ed within the cavity~~ with respect to the electric field pattern and a thickness such that the semiconductor material ~~to~~ provides increasing absorption of radiation at the operative wavelength as energy density of radiation ~~at a surface of~~ within the semiconductor ~~element~~ material increases, to enhance stability of the mode-locked output.

2. (currently amended): The laser system of claim 1, wherein the ~~semiconductor element comprises a~~ semiconductor material ~~that has a band-edge greater than the operative wavelength, such that, at the operative wavelength, the material~~ exhibits sufficient two-photon absorption[[,]] ~~but not one-photon absorption~~ at the operative wavelength to achieve the increasing absorption.

3. (currently amended): The laser system of claim 2, further comprising a reflective structure disposed along an optical path in the cavity, wherein the ~~semiconductor~~ nonlinear

increasing loss element comprises one or more layers of the semiconductor material disposed on the reflective structure.

4. (currently amended): The laser system of claim 1, wherein the ~~semiconductor element comprises a~~ semiconductor material ~~that~~ has a conduction band, and the semiconductor material, when exposed to radiation having the operative wavelength, generates sufficient carriers in the conduction band to initiate sufficient free carrier absorption ~~from the conduction band~~ at the operative wavelength to ~~produce~~ achieve the increasing absorption.

5. (currently amended): The laser system of claim 4, further comprising a reflective structure disposed along an optical path in the cavity, wherein the ~~semiconductor~~ nonlinear increasing loss element comprises one or more layers of the semiconductor material disposed on the reflective structure.

6. (currently amended): The laser system of claim 1, further comprising a transmissive structure disposed along an optical path in the cavity, the transmissive structure including the ~~semiconductor~~ nonlinear increasing loss element.

7. (original): The laser system of claim 1, wherein the system is tunable to produce radiation over a wavelength range, the wavelength range including the operative wavelength.

8. (original): The laser system of claim 1, wherein the mode-locking element comprises a saturable absorber that passively mode-locks the laser system.

9. (original): The laser system of claim 1, wherein the mode-locking element comprises an external function generator driving a modulator that actively mode-locks the laser system.

10. (currently amended): A laser system that defines a laser cavity having an associated electric field pattern at an operative wavelength, the system comprising:

a pump;

a gain medium that produces radiation at ~~an~~ the operative wavelength when pumped by the pump;

a reflector disposed along an optical path in the cavity, the reflector comprising one or more layers of a first semiconductor material that acts as a saturable absorber at the operative wavelength to mode-lock output of the laser system, and one or more layers of a second semiconductor material having a band-gap larger than the energy of a photon at the operative wavelength and smaller than twice the energy of a photon at the operative wavelength, and having a position~~ed within the cavity~~ with respect to the electric field pattern and a thickness such that the second semiconductor material ~~to~~ provides increasing absorption of radiation at the operative wavelength as energy density of radiation ~~at a surface of~~ within the second semiconductor material increases, to enhance stability of the mode-locked output.

11. (currently amended): The laser system of claim 10, wherein the second semiconductor material ~~produces~~ exhibits sufficient two-photon absorption at the operative wavelength to achieve the increasing absorption.

12. (currently amended): The laser system of claim ~~11~~ 10, wherein the reflector is configured such that, when light having the operative wavelength is incident upon the reflector, a resulting electric field within the reflector forms a standing wave within the reflector.

13. (original): The laser system of claim 12, wherein the standing wave has a local maximum at a location of one or more layers of the first semiconductor material.

14. (original): The laser system of claim 12, wherein the standing wave has a local maximum at a location of one or more layers of the second semiconductor material.

15. (original): The laser system of claim 11, wherein the second semiconductor material comprises InP.

16. (original): The laser system of claim 15, wherein the first semiconductor material comprises InGaAs.

17. (original): The laser system of claim 15, wherein the gain medium comprises an Er/Yb waveguide.

18. (original): The laser system of claim 10, wherein the reflector further comprises a dielectric backmirror configured to reflect light having the operative wavelength.

19. (original): The laser system of claim 10, wherein the reflector further comprises a resonant coating or an anti-reflective coating.

20. (currently amended) A laser system that defines a laser cavity having an associated electric field pattern at an operative wavelength, the system comprising:

a pump;

a gain medium that produces radiation at ~~an~~ the operative wavelength when pumped by the pump;

an element that actively mode-locks output of the laser system;

a structure disposed along an optical path in the cavity, the structure comprising a semiconductor material having a band-gap larger than the energy of a photon at the operative wavelength and smaller than twice the energy of a photon at the operative wavelength, and having a position~~ed within the cavity~~ with respect to the electric field pattern and a thickness such that the semiconductor material ~~to~~ provides increasing absorption of radiation at the

operative wavelength as energy density of radiation ~~at a surface of~~ within the semiconductor material increases, to enhance stability of the mode-locked output.

21. (currently amended): The laser system of claim 20, wherein the semiconductor material ~~produces~~ exhibits sufficient two-photon absorption at the operative wavelength to achieve the increasing absorption.

22. (currently amended): The laser system of claim ~~21~~ 20, wherein the structure comprises a reflector, the reflector comprising one or more layers of the semiconductor material.

23. (currently amended): The laser system of claim ~~21~~ 20, wherein the structure comprises a transmissive substrate that includes the semiconductor material.

24. (original): The laser system of claim 23, wherein the structure comprises a waveguide.

25. (original): The laser system of claim 21, wherein the gain medium comprises erbium doped fiber, and the semiconductor material comprises InP.

26. (currently amended): A method of enhancing the stability of a continuous wave mode-locked output of a laser, the laser producing radiation at an operative wavelength and the laser defining a cavity having an associated electric field pattern at the operative wavelength ~~and the laser producing radiation at an operative wavelength~~, the method comprising:

passively mode-locking the output of the laser to produce a continuous train of pulses; and

stabilizing the continuous train of pulses against intensity fluctuations by incorporating into the cavity a ~~semiconductor~~ nonlinear increasing loss element that includes a semiconductor material having a band-gap larger than the energy of a photon at the operative wavelength and

smaller than twice the energy of a photon at the operative wavelength, and having a position~~ed~~ ~~within the cavity~~ with respect to the electric field pattern and a thickness such that the semiconductor material ~~to~~ provides increasing absorption of radiation at the operative wavelength as energy density of radiation ~~at a surface of~~ within the semiconductor ~~element~~ material increases, to enhance stability of the mode-locked output.

27. (original): The method of claim 26, wherein the stabilizing step includes stabilizing the continuous train of pulses against Q-switched mode-locking.

28. (original): The method of claim 26, wherein the mode-locking step includes mode-locking by incorporating a saturable absorber into the cavity.

29. (currently amended): The method of claim 26, wherein the ~~semiconductor element comprises a~~ semiconductor material ~~that~~ exhibits sufficient two-photon absorption[[,]] ~~but not one photon absorption,~~ at the operative wavelength to achieve the increasing absorption.

30. (currently amended): The method of claim ~~29~~ 26, wherein the stabilizing step includes incorporating a mirror into the cavity, the mirror having one or more layers that comprise the semiconductor material.

31. (currently amended): The method of claim 26, wherein the ~~semiconductor element comprises a~~ semiconductor material has a conduction band, and the semiconductor material, when exposed to radiation having the operative wavelength, generates sufficient carriers in the conduction band to initiate ~~that exhibits~~ sufficient free carrier absorption at the operative wavelength to achieve the increasing absorption.

32. (currently amended): A method of suppressing supermodes in the output of an actively mode-locked laser, the laser producing radiation at an operative wavelength and the

laser defining a cavity having an associated electric field pattern at the operative wavelength ~~and the laser producing radiation at an operative wavelength~~, the method comprising:

actively mode-locking the laser to produce a continuous train of pulses; and

incorporating a ~~semiconductor~~ nonlinear increasing loss element into the cavity, the ~~semiconductor~~ nonlinear increasing loss element including a semiconductor material having a band-gap larger than the energy of a photon at the operative wavelength and smaller than twice the energy of a photon at the operative wavelength, and having a position~~ed within the cavity~~ with respect to the electric field pattern and a thickness such that the semiconductor material ~~to~~ provides increasing absorption of radiation at the operative wavelength as energy density of radiation ~~at a surface of~~ within the semiconductor ~~element~~ material increases, to limit peak intensity of the pulses, and thereby suppress supermodes.

33. (currently amended): The method of claim 32, wherein the ~~semiconductor element comprises a~~ semiconductor material ~~that~~ exhibits sufficient two-photon absorption[[,]] ~~but not one photon absorption,~~ at the operative wavelength[[,]] to ~~produce~~ achieve the increasing absorption.

34. (currently amended): The method of claim ~~33~~ 32, wherein the incorporating step includes incorporating a mirror into the cavity, the mirror including one or more layers of the semiconductor material.

35. (currently amended): The method of claim ~~33~~ 32, wherein the incorporating step includes incorporating a waveguide into the cavity, the waveguide being partly formed from the semiconductor material.